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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/561,341	12/19/2005	Teruhisa Shibahara	36856.1378	5954

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EXAMINER

TAKAOKA, DEAN O

ART UNIT	PAPER NUMBER
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2817

NOTIFICATION DATE	DELIVERY MODE
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12/11/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/561,341	Applicant(s) SHIBAHARA ET AL.	
	Examiner DEAN O. TAKAOKA	Art Unit 2817	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 8-11 and 14-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8 – 10, 14, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Takamine (US 6,583,691).

Claim 8: Takamine shows an elastic wave filter comprising: two longitudinally coupled resonator type elastic wave filter elements, each longitudinally coupled resonator type elastic wave filter element including three IDTs arranged on a piezoelectric substrate (col. 8, ln 10) in a transmitting direction of an elastic wave (5-7 and 10-12); wherein two of the three IDTs of one longitudinally coupled resonator type elastic wave filter element are cascade connected to two of the three IDTs of the other longitudinally coupled resonator type elastic wave filter element (5 coupled to 10 and 7 coupled to 12 – Fig. 1 et al.); each of the three IDTs includes a central portion and end portions disposed on either side of the central portion in the transmitting direction of the elastic wave (central IDTs 6 and 11); each of the central portion and the end portions includes at least two electrode fingers disposed therein; and in at least one of the longitudinally coupled resonator type elastic wave filter elements, the electrode fingers disposed in the central portion of at least one or two of the IDTs that are cascade connected are arranged at a pitch that is smaller than a pitch of the electrode fingers disposed in the central portion

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of a remaining IDT that is not cascade connected (col. 8, lns 40-53 et al. where the IDT end finger portions are narrow compared to the rest of the IDT), such that a frequency of a conductance peak in said at least one of the cascade connected IDTs is higher than a frequency of a conductance peak in the remaining IDT (inherent where the structure of the electrode pitch is analogous to Applicants inherently comprising the same conductance peak characteristic).

Claim 9: The elastic wave filter according to Claim 8, wherein in each of the longitudinally coupled resonator type elastic wave filter elements, the electrode fingers of said one or two of the IDTs that are cascade connected are arranged at a pitch that is smaller than a pitch of the electrode fingers of the remaining IDT ($\lambda_2 = 3.9\mu\text{m}$ and $\lambda_1 = 4.19\mu\text{m}$ – col. 9, lns 20-42).

Claim 10: The elastic wave filter according to Claim 8, wherein a relative dielectric constant of the piezoelectric substrate is about 30 or more (inherent; e.g. LiTaO₃ – col. 8, ln 10).

Claim 14: The elastic wave filter according to Claim 8, wherein a center frequency of a passband of the filter is about 500 MHz or more (Figs. 2, 3).

Claim 15: The elastic wave filter according to Claim 8, wherein the elastic wave filter is a surface acoustic wave filter, wherein the IDTs are aligned in a transmitting direction of a surface acoustic wave (Figs. 25, 26 and inherent by the devices input/output connections).

Claim 17: A communication device comprising the elastic wave filter according to Claim 8 (Figs. 25, 26).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being obvious over Takamine (US 6,583,691) in view of Takamine et al. (US 6,781,478).

Takamine teaches the elastic wave filter comprising: two longitudinally coupled resonator type elastic wave filter elements, each longitudinally coupled resonator type elastic wave filter elements including three IDTs (discussed in the reasons for rejection of claims above) but is does not teach where the wherein the electrode fingers of the cascade connected IDTs are arranged at a pitch of about 2.108 μm (where the narrow IDT pitches defined by $\lambda/2$ are 3.9 μm).

Takamine et al. teaches an identical or most nearly similar the elastic wave filter comprising: two longitudinally coupled resonator type elastic wave filter elements, each longitudinally coupled resonator type elastic wave filter elements including three IDTs where the wherein the electrode fingers of the cascade connected IDTs are arranged at a pitch of about 2.108 μm (where the term “about” is broad where the IDT wavelength $\lambda/2 = 2.03\mu\text{m}$ corresponding to pitch – col. 5, ln 11).

It would have been obvious to one of ordinary skill in the art at the time the

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invention was made to have modified the IDT finger pitch disclosed by Takamine with the IDT finger pitch disclosed by Takamine et al. Such a modification would have been obvious where modifications of finger pitches are well-known in the art; where Takamine and Takamine et al. show identical or most nearly similar devices (e.g. Fig. 16 – Takamine et al. where the narrow pitch is shown but silent); and where both prior art references have the same inventor thus where it would have been obvious and known thus suggesting the obviousness of the modification.

Claim 16 is rejected under 35 U.S.C. 103(a) as being obvious over Takamine (US 6,583,691) in view of Funasaka (US 7,245,193).

Takamine teaches the elastic wave filter comprising: two longitudinally coupled resonator type elastic wave filter elements wherein the IDTs are aligned in a transmitting direction of an elastic wave between the piezoelectric substrate (discussed in the reasons for rejection of claims above) but is silent where the elastic wave filter is an elastic boundary wave filter, the elastic boundary wave filter further comprising a thin film disposed on the piezoelectric substrate, the thin film having an elastic constant or a density that is different from that of the piezoelectric substrate.

Funasaka teaches an elastic wave device comprising a thin film (8) disposed on the piezoelectric substrate (4), the thin film having an elastic constant or a density that is different from that of the piezoelectric substrate (obvious where the thin film is SiO, SiN, AlO et al. – col. 6, lns 39, 40 and the piezoelectric substrate is a different material – col. 5, lns 32-36 obviously having a different elastic constant or a density).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the elastic wave filter disclosed by Takamine with the boundary thin film disclosed by Funasaka. Such a modification would have been obvious where boundary thin films are well-known in the art and where Funasaka would have realized the advantage of providing protection and improvement for temperature characteristics (col. 6, Ins 52-55) thus suggesting the obviousness of the modification.

Response to Arguments

Applicant's arguments filed November 4, 2009 have been fully considered but they are not persuasive.

Applicant's arguments, see page 7, filed November 4, 2009, with respect to the rejection(s) of claim(s) 8 – 11, 14, 15 and 17 under 35 U.S.C. 102 § and 35 U.S.C. 103 § have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Takamine (US 6,583,691).

Applicants submit claim 8 has been amended where “in at least one of the longitudinally coupled resonator type elastic wave filter elements, the electrode fingers disposed in the central portion of at least one of the IDTs that are cascade connected are arranged at a pitch that is smaller than a pitch of the electrode fingers disposed in the central portion of a remaining IDT that is not cascade connected.”

The Examiner agrees “At best, Takamine ('478) teaches electrode fingers 206 and 207 of the IDT 202 that are arguably arranged at a pitch that is larger than a pitch of

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the electrode fingers of the IDTs 201 and 203.” showing the larger pitch at the end portions (Fig. 8). While Takamine et al. shows alternative embodiments (e.g. Fig. 16), the specification is silent regarding finger pitch although graphically showing smaller electrode pitches at the ends of the IDTs with a larger central finger pitch. Accordingly, the rejections under 35 U.S.C. 102 § in view of Takamine et al. have been withdrawn however under further search, prior art of Takamine (US 6,583,691) is applied above.

Allowable Subject Matter

Claims 12 and 13 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: Reasons for allowance of the claims were given in the Office action dated August 5, 2009 and remain the same.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN O. TAKAOKA whose telephone number is (571)272-1772. The examiner can normally be reached on 9:00a - 5:30p Mon - Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Dean O Takaoka/
Primary Examiner, Art Unit 2817